



WEAPON SYSTEM POLLUTION PREVENTION

MONITOR



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FEATURE STORY

SPACE & MISSILE SYSTEMS CENTER (SMC) HOSTS THE 8th AIR FORCE MATERIEL COMMAND (AFMC) WEAPON SYSTEM POLLUTION PREVENTION CENTER WORKING GROUP MEETING

On 4-6 November 1997, Space and Missile Systems Center (SMC), located at Los Angeles AFB, El Segundo, CA, sponsored the 8th Air Force Materiel Command (AFMC) Weapon System Pollution Prevention Center Working Group (WS P2 CWG) meeting. LtCol Denton Crotchett, (SMC/AXZ) and Ms. Gail Sheaffer (The Aerospace Corporation) were the primary sponsors and hosts for the meeting. The workshop focused on cross-feeding Environment, Safety and Health (ESH) information across the command, MAJCOMs, and AF centers of excellence (e.g., AFCEE).

Brig Gen John L. Clay, SMC/CV, welcomed the WS P2 CWG participants and provided information about SMC programs and efforts to date. SMC provides program management for a number of high dollar space, launch vehicle, and satellite programs. Brig Gen Clay provided information on each of the SMC programs which included meteorological satellites, communications satellites, global navigation satellites, orbital positioning systems, space based early detection and warning systems, satellite and launch control systems, Titan, Atlas, and Delta launch vehicles, the new Evolved Expendable Launch Vehicle, and the Airborne Laser Program.

Brig Gen Clay identified the Systems Acquisition Directorate (SMC/AX) as the focal point for ESH concerns at Los Angeles AFB, CA. SMC/AX addresses installation as well as space systems ESH issues. He stressed the need to establish an integrated effort to address ESH issues. The challenges in meeting these requirements includes meeting customer needs while living within existing cost constraints.

Mr. Tad McCall, the Deputy Assistant Secretary of Defense for Environment, Safety, and Occupational Health, was a guest speaker at the workshop. According to Mr. McCall, tracking ESH costs is a big concern for the Air Force. The existing financial management system needs to incorporate Activity Based Cost Accounting to track ESH costs imbedded into overall operating costs. ESH costs can approach 20% of a base's

total operating cost. Therefore, ESH experts need to be incorporated into all planning activities. Mr. McCall stressed the need to be proactive and not wait for environmental regulators to set compliance goals which drive ESH costs. He stated that we need to think ideally and try to approach zero ESH defects to bring our costs down. The ESH community needs to provide awareness to the commanders who are responsible for including ESH into program directives.

Mr. Ray Olfky, HQ AFMC/DRIE, provided an update of the WS P2 CWG's activities and approach to ISO 14000. He identified the four primary areas of ISO 14000 as policy, planning, implementation and operations, and checking and corrective action. The four primary areas of ISO 14000 are being utilized by Air Force Materiel Command (AFMC). HQ AFMC/DR generally provides direction and policy. HQ AFMC/CEV is involved primarily in planning. Implementation and operations are being carried out with cooperative efforts with the Air Force Center for Environmental Excellence (AFCEE). Several working groups are involved in providing checking and corrective action.

Details related to the briefings given at this meeting can be accessed at <http://afmc.wpafb.af.mil/HQ-AFMC/DR/dri-home/wsp2/cwg.htm>. Some of the key briefing and breakout session information from this meeting have been summarized in this issue of the MONITOR. For further information about the activities of the WS P2 CWG, please contact Mr. Ray Olfky at DSN 986-3680. ■

POLICY UPDATE: AIR FORCE INSTRUCTION 32-7086, HAZARDOUS MATERIALS MANAGEMENT

This Air Force Instruction (AFI) defines the Hazardous Materials (HAZMAT) Management Process (HMMP). The purpose of the HMMP is to manage the procurement and use of HAZMAT to support Air Force missions, ensure the safety and health of Air Force personnel and surrounding communities, minimize Air Force dependence on HAZMAT, and protect and sustain the environment.

One of the primary drivers for the development of AFI 32-7086 was the August 1993 Executive Order (EO) 12856. EO 12856 requires that government installations track and report HAZMATs in order to comply with the Toxic Release Inventory (TRI) reporting requirements. The EO also mandates federal compliance with the Pollution Prevention Act and the identification and reduction or elimination of HAZMAT requirements in weapon system documentation. AFI 32-7086 establishes the Air Force's strategy for meeting these requirements.

The AFI 32-7086 HMMP provides for the identification, management, tracking, and minimization of HAZMAT. It consists of three main, inter-related components: the installation HAZMAT Pharmacy Program (HPP), the weapon system HAZMAT Reduction Prioritization Process (HMRPP), and the Ozone Depleting Substance (ODS) Management Program. The AFI defines HAZMAT to include both Class I and Class II ODS, but it excludes hazardous wastes, munitions, and pharmaceuticals.

This AFI is the first cross functional AFI. It is the product of over four years of effort by an Air Staff team from Civil Engineering, Communications, Legal, Logistics (Maintenance and Supply), Operations, Bioenvironmental Engineering, Safety, and Acquisition (Contracting and Systems Engineering). The AFI identifies cross functional cooperation as the key to effective HAZMAT management and establishes formal cross functional HMMP teams at all levels of command in the Air Force. To ensure senior leadership visibility and support, these HMMP teams report directly to the Commander. The AFI establishes Civil Engineering as the HMMP team lead, with Logistics Maintenance serving as the point of contact for the HMRPP and weapons systems ODS management.

The HPP controls the authorizing, procuring, issuing, and tracking of HAZMAT by process at installations. The key to the HPP success is having a data base system to manage and track HAZMATs by user, process, and location. The AFI requires that the HPP must use a system approved by the Defense Environmental Security Corporate Information Management (DESCIM) office. DESCIM, in cooperation with the services, is developing the Hazardous Substance Management System (HSMS). The DESCIM Program Office has approved the following three interim tracking systems for Air Force use until HSMS is complete: the Air Force Environmental Management Information System (AF-EMIS); the Depot Maintenance-Hazardous Materials Management System (DM-HMMS); and the Environmental Tracking System (EnTrak) system. The HPP uses

these DESCIM approved HAZMAT tracking systems to generate data reports in support of the TRI reporting, the HMRPP, and ODS management.

The HMRPP links the installation HAZMAT reduction needs with the weapon system operations and maintenance processes and Single Managers that drive most of the hazardous material usage at Air Force installations. This linkage is critical because only the Single Managers have the authority to change the weapon system technical documents that contain the HAZMAT usage requirements. Single Managers must ensure that any change to a documented weapon system operations or maintenance process does not compromise mission capability or increase environment, safety, and occupational health (ESOH) risks and costs. However, only the installations have the information necessary to be able to identify the weapon system HAZMAT usage requirements that are creating unacceptable ESOH compliance problems and costs at base level.

The HMRPP provides a formal way for installation HMMP teams to identify, prioritize, and communicate their weapon system HAZMAT reduction needs to the appropriate Single Managers. The HPP identifies the type and quantifies the amounts of HAZMAT that each weapon system process requires. The HMMP teams combine these data with the ESOH compliance concerns and costs to set priorities for reducing HAZMAT usage in specific weapon system processes. The HMRPP defines how the HMMP teams can communicate reduction needs to the appropriate single manager controlling the process (and documentation) driving the HAZMAT usage. This AFI adds the HMRPP data collection process to the existing ESOH Technology Needs Survey (TNS) that also supports the ESOH Technical Planning Integrated Product Team (TPIPT).

The HMRPP integrates weapon system HAZMAT reduction needs into the existing weapon system requirements generation, prioritization, funding, and execution processes. The HMRPP defines how HMMP teams work with the weapon system single managers to develop prioritized, cost-based justifications for funding the identified weapons systems changes required to reduce or eliminate selected HAZMAT uses. When MAJCOMs provide funding, Single Managers are responsible for implementing the changes without compromising mission capability or increasing ESOH risks and costs. Single Managers are responsible for including unfunded HMRPP needs in future system modification projects where they can implement HMRPP changes with little or no additional cost.

The ODS Management Program covers both facility and weapon system Class I and II ODS requirements. The AFI states that existing facility equipment that uses Class I ODS can continue to rely on the Class I ODS until the facility equipment reaches the end of its economic life. Then the Air Force must replace it with equipment that does not use Class I ODS. AFI 32-7086 prohibits new facility equipment from requiring the use of a Class I ODS.

The AFI only requires existing weapon systems to eliminate Class I ODS requirements when a technically and economically feasible substitute is available. The Air Force's Defense Reserve stockpile of Class I ODSs enables weapon system Single Managers to make business-based decisions that do not increase the ESOH risks and costs when considering conversion to non-ODS systems and processes. Thus, Single Managers and the using MAJCOMs may decide to continue to rely upon Defense Reserve supplies of a Class I ODS, rather than try to fund the sometimes major costs to implement a non-ODS alternative. However, the AFI does prohibit new weapon systems from including requirements for Class, I ODS.

The AFI also defines the Air Force Single Acquisition Official (SAO) approval process. It requires that an Air Force SAOs must approve any requirement in a contract for the use of a Class I ODS. The AFI also requires SAO approval for allocations of Class I ODS from the Defense Reserve to MAJCOMs and Single Managers. It limits the Air Force SAO approving officials to only those general officers or civilian equivalents in HQ USAF/ILE (Civil Engineering), HQ USAF/ILM (Maintenance), and SAF/AQR (Science, Technology, and Engineering). All requests for SAO approvals must come in through the SAF/AQRE office.

The AFI establishes new restrictions on Air Force usage of Class II ODS. New facility equipment and weapon systems whose projected lives extend beyond the year 2020 may not include any requirements for Class II ODS. MAJCOMs and Single Managers must eliminate existing requirements for Class II ODS before the production phase out occurs because the Air Force does not intend to stockpile Class II ODS. Most Class II ODS production will phase out incrementally between 2004 and 2030. However, because of its high Ozone Depleting Potential, production of the Class II ODS solvent HCFC-141b must cease by 01 January 2003.

In summary, AFI 32-7086 provides formal processes for identifying, tracking, and reducing the Air Force reliance on HAZMAT. It integrates these processes into the existing ESOH compliance programs and the weapon system management process. This ensures that HAZMAT usage reductions occur in a cost-effective manner consistent with existing Air Force structures and overall mission requirements. The AFI also mandates that Single Managers ensure that changes made to weapon systems to reduce HAZMAT (and ODS) usage do not increase ESOH risks and costs.

This article was submitted by LtCol Sherman Forbes, SAF/AQRE. Some of the information in this article was also presented in a briefing given by LtCol Denton Crotchett at the 8th AFMC WS P2 CWG Meeting. ■

AIR FORCE MATERIEL COMMAND (AFMC) ESTABLISHES A WORK BREAKDOWN STRUCTURE FOR ITS BUSINESS AREAS

General Babbitt has established specific goals and direction for the Air Force Materiel Command's (AFMC's) business areas to ensure that his command "provides combat support second to none and willingly gives up unneeded funds for other critical mission areas in the Air Force." The Center Commander's direction for his eight business areas includes the following: understanding and reducing the cost of business, defining business outputs/cost, and developing business execution plans that baseline output/unit cost and define efficiencies for reducing unit costs. The goal for all AFMC business areas is to develop the FY00-05 Program Objective Memorandum (POM) using the unit cost method.

Figure 1 summarizes AFMC's Work Breakdown Structure (WBS) for its business organizations. Establishing a business based structure to command activities is part of an effort to focus the command's attention on critical

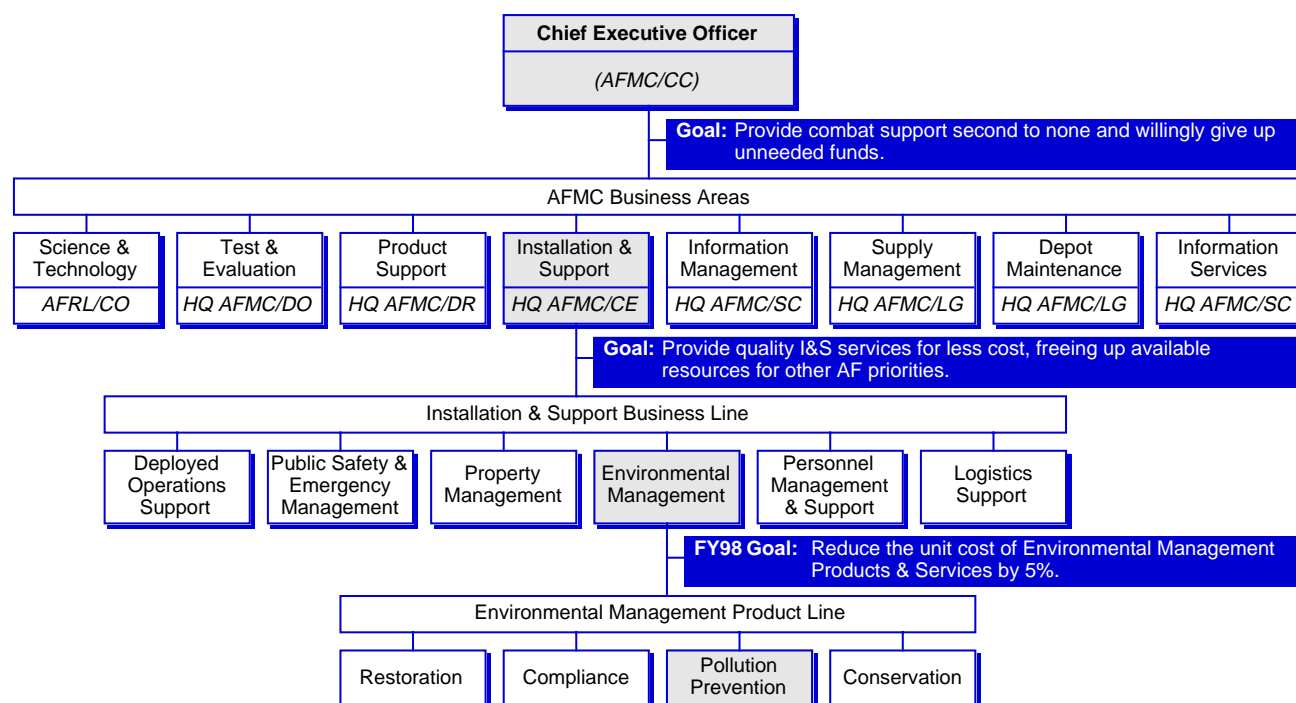


Figure 1. Summary of AFMC's Work Breakdown Structure for the Installation & Support Business

issues that impact the bottom line and have measurable benefits. As shown in Figure 1, Pollution Prevention Products and Services are managed by the Environmental Management Product Line and funded through the Installation and Support (HQ AFMC/CE) business area. Figure 2 summarizes the FY98 strategy and goals for the Environmental Management Product Line. Environmental Management's execution goal for FY98 is to reduce the unit cost of its products and services by 5% unless specified. Details related to the AFMC's P2 products and services, as defined in HQ AFMC's Pollution Prevention Program Business Plan, are provided below.

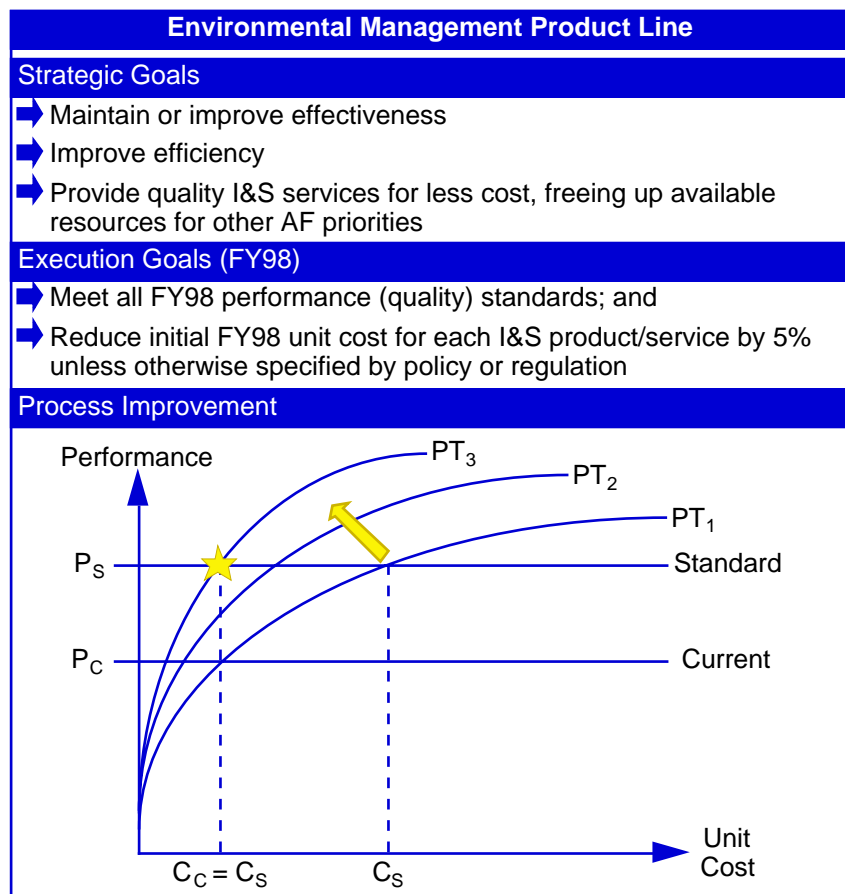


Figure 2. Overview of the Strategic & Execution Goals for AFMC's Environmental Management Product Line

vice across the command. The unit cost, in conjunction with the quantity and quality measurements, will drive future improvements in the efficiency of the P2 program. Improvements will appear as reduced unit costs, increased quantity or increased quality. This information will allow the command and the installation commanders to move funding in a manner that best supports the mission of the Air Force.

For further details regarding AFMC's P2 Program Business Plan, please contact Lt. Col. Richard Ashworth at DSN 787-7414. ■

Overview of AFMC's P2 Product and Services

The focus of AFMC P2 products and services is to help customers reduce compliance burdens and liability and maintain previously implemented initiatives through management of a cost effective pollution prevention program to enhance mission sustainment. The level of P2 service, in both quantity and quality, provided the customer using recurring P2 resources will be measured as seven different activities: address compliance sites, perform outreach and awareness, support the pharmacy operations, support the solid waste recycling program, manage P2 projects, provide reports, and support weapon system pollution prevention.

The unit costs for the defined minimum and standard levels of service will be used to establish the future recurring resource requirements based on a consistent level of service.

THE MONITOR ON INTERNET

The Weapon System Pollution Prevention MONITOR is available on the Internet. The Monitor can be accessed from the ESOH Service Center Home Page at <<http://www.brooks.af.mil/ESOH/esohhome.htm>> or directly at <<http://www.brooks.af.mil/HSC/EMP/Monitor/Monitor.html>>. Current issues of the Monitor are in a Portable Document Format (PDF) file which requires a reader program for viewing or downloading. The Adobe Acrobat reader is available for downloading at no cost. ■

THE WORLD WIDE WEB AS A P2 INFORMATION RESOURCE

As a dedicated weapon system pollution prevention (P2) professional, you probably have encountered many situations where you have been called upon to recommend a material substitute for any one of several bad actors that have become imbedded in our Air Force weapon systems. If your experience was typical, you were faced with either (1) a complete lack of information on potential substitutes or (2) a veritable deluge of information of questionable pedigree. During two recent Weapon System Center Working Group meetings, we devoted several days to work this very problem. The “desirement” was for a mechanism that would generate a list of candidate substitutes as well as provide simple environment (E), safety (S) and health (H) information on each. After several hours of discussion, our “data breakout” session determined what you probably already know, it’s just not that simple. However, rather than place this in the too hard to do category and quit, let’s look at what is available and how it can be used.

The group identified a wide variety of information sources including personal contacts, manufacturers/vendors, technical libraries and World Wide Web (WWW) sites such as EPA, DENIX, TOXNET, MEDLINE, PRO-ACT, etc. One major problem with the availability of such a volume of data is finding the exact information needed, determining its authenticity, then ensuring it is properly used. There are really four characteristics that effect the applicability of any material substitute. These are (1) effectiveness, (2) environmental impact, (3) safety impact, and (4) health impact. The effect of these somewhat independent variables is usually process dependent and therefore, each must be adequately evaluated for a given process. What we particularly want to avoid is solving an “E” problem only to get bit by “S” or “H” or vice versa.

The preferred approach is to work within the system engineering process, and ultimately embed E, S and H into this process. Although systems engineers try to design and build supportable systems, they may not realize how a particular design characteristic drives a specific material choice with negative E, S and H impacts. Conversely, most ESH professionals often do not understand the impacts of a material substitution on the total system performance. In order to add value to the systems engineering process, we must not lose sight of the fact that alternative materials must allow the system to work as advertised throughout the entire system life cycle.

The overall conclusion of the data breakout group was that, for the foreseeable future, we cannot replace the professional judgment of ESH professionals with an automated system. While this may be good news to some (you’ll still have a job), the bad news is that the job is getting tougher. Given that ESH professionals will become closely involved in the material substitution process, the problem becomes how do we help connect the ESH professional with the right information.

Rather than develop and maintain a new database, the data breakout group determined that most of the data was already available via the World Wide Web. The task then became how to identify credible data sources for the ESH professional. As it turns out, ASC/EM has done most of this on their Products and Services WWW page. ASC/EM graciously agreed to be the command focal point for ESH data. They will keep it current and welcome any feedback to make this a more useful tool. In addition to linking to various P2 handbooks and regulatory guidance, ASC/EM has neatly grouped much of the available information into useful categories such as Engineering, Occupational Safety and Health, Environmental, ESOH, EPA, Toxicology, MSDS, etc. Rather than describe each category in detail, I strongly recommend you check for yourself at <http://www.ascem.wpafb.af.mil/products.htm>. Additionally, we at HQ AFMC/DRIE maintain a page of links to (hopefully) useful sites including several product and logistics centers (<http://afmc.wpafb.af.mil/organizations/HQ-AFMC/DR/dri-home/wsp2/newlinks.htm>). Let us know here, at headquarters, how well these sites help you and provide us your suggestions for further improvement.

For additional information on material selections, please refer to LtCol Denton Crotchett’s excellent article [Making Smart Choices in Material Selection](#), MONITOR, Sept 1997, p.11.

This article was submitted by Mr. Jay Carroll, HQ AFMC/DRIE and summarizes the activities of one of AFMC CWG’s breakout session. ■

COMMUNITY CROSS-FEED**EDITORIAL**

We sent a letter along with the November 97 issue of the MONITOR asking customers to let us know if they want to continue to receive the hard copy, since the newsletter can be accessed by Internet. Some of you have responded with an affirmative. A few of you prefer e-mail. This option is not available at this time.

We will continue to provide a hard copy of the MONITOR to those who reply with an affirmative and to those who, to the best of our knowledge, are working environmental programs. This is an effort to streamline our mailing list. If you are a government employee or contractor working weapon system pollution prevention or related environmental issues and do not have a lot of visibility, you need to respond if you want to continue to receive the MONITOR. Otherwise, your name will be removed from the mailing list.

The Internet address is <http://www.brooks.af.mil/ESOH/pubs.htm>. Point your cursor to the MONITOR and click. A number of different issues of the MONITOR are available. Current issues of the newsletter are in a Portable Document Format (PDF) file which requires Adobe Acrobat Reader for viewing. You can download Adobe Acrobat Reader from the MONITOR home page.

Again, please let us know if you would like to continue to receive the hard copy. Send me an e-mail at john.biggs@guardian.brooks.af.mil or call DSN 240-5452/210-536-5452. ■

HAZARDOUS MATERIAL INFORMATION SYSTEM

Human Systems Center Occupational and Environmental Health Directorate Industrial Hygiene Division (Det. 1, HSC/OEMI) maintains the DoD6050-5-CD Hazardous Material Information System (HMIS) for the United States Air Force. The HMIS-CD consists of an accumulation of material safety data sheets (MSDSs) for materials, products, and chemicals used by the United States Air Force.

The latest version of the HMIS-CD consists of two sets of compact discs (CDs). The current HMIS-CD (all MSDSs dated 1 Jan 88 to the present) is on two discs while the Archive HMIS-CD (all MSDSs dated 31 Dec 87 and older) is on a third disc. A fourth disc (Environmental Reporting Assist File) consists of a list of products which contain chemicals appearing on a specific United States Environmental Protection Agency (EPA) report and is a subset of the entire HMIS data base.

The current HMIS-CD contains the total index for all products contained on both the HMIS-CD and the Archive HMIS-CD for the following five data fields only: Federal Supply Code (FSC), National Index Identification Number (NIIN), Commercial and Government Entity (CAGE), part number indicator and part number/trade name. If you perform a search on any other data field, such as company name, Chemical Abstract Service (CAS) number or ingredient, you will only get hits for the records contained on that particular CD. If you want all MSDS records for a particular company, you will need to search on both the current HMIS-CD and the Archive HMIS-CD. The Archive HMIS-CD contains the index only for the products contained on that particular CD. The current HMIS-CD and the Archive HMIS-CD programs run independently of each other. If you are running the CDs using Windows, you can open both and tile the windows. If you are running the HMIS-CD in DOS, you will have to close one application to use the other.

Your assistance is needed in keeping the HMIS-CD current with the most up-to-date MSDSs. If you receive a new MSDS for a product (via local purchase, request, or supply) which is not in HMIS, please send us a copy of the MSDS so it may be input into the HMIS system. Forwarding the MSDSs at regular intervals will allow us to enter the data into HMIS quicker and more efficiently.

Mail MSDSs to the following address: HMIS; Det. 1, HSC/OEMI; 8213 14th Street Bldg 915; Brooks AFB TX 78235-5246. If the MSDS is of good quality (not small print) you may FAX it to DSN 240-1854.

To subscribe to HMIS, e-mail your request to anna.willis@guardian.brooks.af.mil or call Ms. Anna Willis at DSN 240-6159 or Comm. 210-536-6159.

This article was submitted by Ms. Anna Willis, Det. 1, HSC/OEMI. ■

ENV222 HAZARDOUS MATERIAL MANAGEMENT PROGRAM

The Air Force Institute of Technology (AFIT) located at Wright-Patterson AFB, OH, is offering a course, ENV222 Hazardous Material Management Program, which is designed to provide personnel with the ability to meet AFI 32-7086 requirements. AFI 32-7086 Hazardous Materials (HAZMAT) Management establishes the Air Force's strategy for meeting the requirements of Executive Order (EO) 12856. EO 12856 requires the tracking and reporting of HAZMAT to be in compliance with environmental regulations such as the Toxic Release Inventory (TRI) reporting requirements. EO 12856 also mandates federal compliance with the Pollution Prevention Act and the identification and reduction or elimination of HAZMAT requirements in weapon system documentation.

ENV222 Hazardous Material Management Program is designed to enhance personnel's knowledge in understanding the objectives, principles, responsibilities and daily environment, safety and occupational health (ESOH) requirements of a HAZMAT Pharmacy Program (HPP). In addition, the ability to communicate and orchestrate these requirements both within and outside their respective organizations as part of the HAZMAT Management Process (HMMP) team will be enhanced. This course should provide personnel with the knowledge to successfully plan, establish, and execute a HAZMAT Management Program. Personnel should be able to direct follow-up actions such as selling the program to senior leadership and programming for pharmacy requirements.

This course emphasizes pollution prevention concepts such as source reduction and reutilization within the overall management of HAZMAT and introduces management techniques for operating a sound HPP. Specific topics include the responsibilities of cross-functional team members comprising the HMMP and HPP; various laws, regulations, and forms affecting key HPP workers; the authorization and distribution processes of HAZMAT (e.g. overall inventory management; obtaining, receiving, and issuing HAZMAT); and the use of automated management information systems for managing and tracking HAZMAT.

ENV222 Hazardous Material Management Program provides the training necessary to implement AFI 32-7086. Key workers in the HPP will have the proper training. HMMP team members will have increased awareness of environmental issues and be able to better function as a team in managing HAZMAT.

For additional information, contact Capt Darren Gibbs, Course Director, at the Civil Engineer and Services School (CESS), Air Force Institute of Technology, Wright-Patterson AFB, OH. You can reach him at DSN 785-5654 ext. 3536/937-255-5654 ext. 3536, or e-mail to dgibbs@afit.af.mil. Additional information about other CESS courses, can be found at our web site at <http://cess.afit.af.mil/>. ■

APPLIQUÉS AS A REPLACEMENT FOR PAINTING AIRCRAFT

Appliqués are adhesive-backed polymer films that have been used to protect or mark aircraft. Appliqués have been developed primarily for commercial aircraft and automotive applications. Use on military aircraft has been for rain erosion protection on leading edges and radomes, abrasion resistance on the belly of aircraft and lower edges of flaps, and various markings and insignia. Decals (markings, insignia and "decorative" small appliqués) have been used on Air Force aircraft for over 30 years with some success. There has been recent interest in using appliqués to fully cover the exterior of military aircraft, with the promise of eliminating the need for painting. The National Institute of Standards and Technology (NIST) is sponsoring an appliqué development program with 3M and Lockheed directed toward commercial aircraft. Appliqués used for commercial aircraft do not address corrosion and signature concerns of the Air Force. The Joint Strike Fighter (JSF) program office is sponsoring an appliqué demo program on an F-18. Emphasis is on flight demonstration.

Eliminating the need to paint aircraft would drastically reduce the amount of volatile organic chemicals (VOCs) released by the Air Force. Paint infrastructure such as hangars, paint booths, and other facilities could be eliminated or drastically reduced if appliqués could be applied at the field or depot level. The application of appliqués to an aircraft could also be faster and less expensive than painting via elimination of paint storage, handling, and other logistic trails. The chemi-

cal processing of the polymeric film (paint substitute) can be better controlled in the manufacturing environment than at the depot. This could result in more consistent properties with improved abrasion/erosion resistance than paint. The chemical film comprising the appliqué could be tailored during manufacture for the incorporation of low observable treatments to reduce radar or infrared signature.

The major disadvantages of appliqués of aircraft is incorporation of corrosion protection. Current aircraft require an initial primer on top of the metal structure as a corrosion management treatment before final topcoat. Current appliqués do not incorporate corrosion protection, and military aircraft would still require primer applied by conventional paint processes. This impacts the infrastructure savings if appliqué aircraft require corrosion primers. Appliqués are perforated to ease installation and remove air bubbles. These small holes, as well as inherent seams and edges, are breaks in the protective nature of polymeric coatings on the aircraft. The impact of these discontinuities upon corrosion, aerodynamics, signature and appearance must be addressed. Since appliqués are sheet products, conforming complex curved surfaces with minimal distortion is critical. All military aircraft appliqués must conform to existing performance and appearance specifications, meeting color and gloss requirements after years of service. Flightline maintenance must accommodate repair and removal of this new media with minimal impact upon their existing paint removal infrastructure.

Appliqués offer potential cost and performance savings over conventional spray painting of military aircraft. Elimination of pollution products and reduction of paint related infrastructure is quite a carrot to follow. The Air Force must be sure to protect new and existing aircraft from corrosion. Use of appliqués on Air Force systems must be preceded with sound evaluation, and development of treatments that fully protect our assets.

For further information, contact Mr. S. L. Szaruga, AFRL/MLBT, at DSN 785-9064. ■

AIR FORCE PARTNERING INITIATIVE - PERCHLORATE TOXICOLOGICAL RESEARCH PROGRAM

Preliminary Work

In 1992, a toxicological review related to perchlorate was conducted by the United States Environmental Protection Agency (EPA) at the request of Region 9 with the results of their review published as an internal document. Prompted by this EPA work, the Perchlorate Study Group (PSG) was created. The PSG is composed of industry stakeholders related to perchlorate, primarily manufacturers and users of significant quantities of perchlorate. The PSG independently reviewed the technical information related to the toxicology of perchlorate and forwarded their analysis of this work to the EPA in June of 1995. The EPA reviewed this information and in October of 1995 issued a revised perchlorate report. However, this revised report essentially supported the low perchlorate reference doses

which had been developed in the 1992 assessment. To quote the EPA cover letter, "To summarize, there are many questions about the chronic effects of perchlorate left unanswered by the existing data. The series of studies that identified a human Frank Effect Level at doses ranging from 6-14 mg/kg/day is particularly troubling. Thus, until adequate chronic data is available that addresses the effects of perchlorate on the hematopoietic system, we feel that the appropriate provisional RfD is in the range of 1 to 5E-4 mg/kg/day." (USEPA, NCEA, 1995).

USAF Health Effects Research

In March 1997, the non profit organization, Toxicology Excellence for Risk Assessment (TERA), conducted an International Toxicity Estimates for Risk (ITER) Peer Review of four chemicals in Cincin-

nati, Ohio. Perchlorate was evaluated as one of the chemical. The review was done at the request of the PSG. After completing the review, the independent panel recommended no change in the current proposed reference dose. Further, because of the data gaps, the panel made recommendations including new toxicology studies and an expanded literature review. Members of the panel suggested that the Air Force take the lead in organizing and conducting the studies. At this point the United States Air Force, also a stakeholder in the perchlorate issue due to contamination on Mather Air Force Base, decided to take on the challenge and pursue funding and protocol development for additional perchlorate studies. Priorities for the program were established and money from the Air Force was allocated to study the perchlorate issue. In the end approximately 1 million

dollars, from the Air Force and the PSG, were allocated to Ammonium perchlorate studies. The PSG, as a partner with the Air Force, contracted with TERA to conduct workshops to develop the toxicology study protocols. These workshops were attended by a broad range of experts and stakeholders in the perchlorate toxicology issue. Workshop meetings were held in May to firmly establish details of the toxicology study protocols, and to identify and address, if possible, all concerns related to the perchlorate health studies.

The workshops resulted in identifying two immediate toxicology goals using rodent studies. A 90-day research effort was planned, which meets EPA requirements for such a study. The study includes a 30-day recovery period with additional rats added to the end of the 90-day study. Thus, there will be a minimum of 120 days necessary to generate the data related to perchlorate toxicology. This study is designed to go beyond strictly looking at the effects of perchlorate on the thyroid gland,

and will investigate other potential effects of perchlorate including which effects are reversible. The second goal is a developmental neurobehavioral toxicology study to look for potential effects of perchlorate during offspring development. Both studies funded by the Air Force were initiated in September 1997.

Further ITER Peer Review

The group that participated in the workshops that defined the overall toxicological program also agreed to follow the project in a peer-review capacity. This peer review group is composed of state regulators from California, California state toxicologists and researchers, local California water quality regulators, USEPA regulators, USEPA toxicologists and researchers, personnel from industry and the University of Cincinnati, and US Air Force personnel. This peer-review group currently stands at 14 members due to the addition of new stakeholders as they are identified. For instance, the State of Nevada recently had one of their regulators added to the peer-review group due to the recent iden-

tification of perchlorate contamination in Nevada. The intent is to include stakeholders and relevant players in the project from the start so that the results of the study will be as strong and defensible as possible.

Schedule

The intent is to complete data generation on toxicological effects by late spring of 1998. At that time the data will be turned over to TERA. TERA will then analyze the data and determine the effect, if any, on the provisional reference dose for perchlorate. The goal is to have a report incorporating the new data completed by July 1, 1998. Another ITER Peer Review is scheduled for 2/3 September 1998, to evaluate the data and make recommendations to TERA. After the ITER meeting, the information from the studies and the review would be given to the EPA for possible action. For information concerning the Ammonium Perchlorate Program contact David R. Mattie, Ph.D., AFRL/HEST at 937-255-3423 extension 3105 (DSN 785). ■

1998 DLA ENVIRONMENTAL PRODUCTS (EP) CATALOG

The fourth edition of DLA's Environmental Products catalog is now available to customers in electronic format on the World Wide Web. In December, approximately 15,000 hard copies were mailed to DLA customers worldwide. A CD-ROM version of the catalog will be enclosed with each hard copy printed this year.

The 1998 catalog contains over 850 national stock-numbered items in 19 product categories. New categories this year are reusable batteries (alkaline & NiCad) and alternative refrigerants (EPA SNAP-approved). Categories printed in earlier editions, such as Petroleum, Oils & Lubricants and Firefighting Equipment, have been expanded by adding new items or additional national stock numbers.

The DLA EP catalog is a user-friendly publication which clearly suggests alternatives to previously used products or processes. These alternatives may be none ozone depleting, less toxic or promote recycling and waste minimization.

New technical data for the solvent categories in 1998 include flashpoint (if lower than 141 degrees Fahrenheit), class II ozone depleting chemical ingredients, if any, and toxicity data, such as LD 50, where available for the blended product. The catalog also has an expanded points of contact section which will help customers request additional information from any of the DLA supply centers.

To be added to the mailing list for hard copies of the EP catalog, please call DSCR's Product Marketing Division toll free at (800) 345-6333 or DSN 695-5699. Multiple copies for large organizations or for use as student handouts are also available. Most catalogs published by Defense Supply Center Richmond are available on the Internet at <http://www.dscr.dla.mil>. You can view and download catalogs and actually place MILSTRIP requisitions for any DLA-managed NSN while on line.

If you have questions about the EP catalog or DLA's environmental products, contact Stephen Perez, DSCR's Product Executive for Environmental Products, at (804) 279-6054 or E-mail sperez@dscr.dla.mil. ■

SERVICES MANDATE USE OF RE-REFINED OIL

The Army, Navy and Air Force have mandated that their installations switch from virgin to re-refined oil now available (10W30 and Mil Spec 15W40) and soon to be available grades listed below. This will help the Services be in compliance with Executive Order 12873 and the Resource Conservation and Recovery Act (RCRA). Use the following chart to identify the re-refined stock numbers corresponding to the virgin stock numbers you are now using. Call Ms. Robin Champ, Defense Supply Center Richmond (DSCR), at DSN 695-4908/ (804) 279-4908 or e-mail her at rchamp@dscr.dla.mil for information concerning new grades, availability, price lists, and relevant brochures. ■

IF YOU ARE USING THESE NSNs				SWITCH TO THESE RE-REFINED NSNs			
VIRGIN Commercial Admin Oils (iaw A-A-52039)				RE-REFINED Commercial Admin Oils (iaw A-A-52039)			
NSN	Viscosity	UI	FY98 Price	NSN	Viscosity	UI	FY98 Price
9150-01-227-8210	10W30	BX	\$11.65	9150-01-413-6897	10W30	BX	\$11.65
9150-01-230-9749	10W30	CO	\$18.61	9150-01-413-6892	10W30	CO	\$18.61
9150-01-230-9748	10W30	DR	\$159.36	9150-01-413-6990	10W30	DR	\$159.36
9150-01-320-3706	5W30	BX	call	9150-01-422-9253	5W30	BX	call
9150-01-348-1596	5W30	DR	\$214.70	9150-01-422-9326	5W30	DR	call
VIRGIN Commercial Tactical Oils (iaw A-A-52306)				RE-REFINED Commercial Tactical Oils (iaw A-A-52306)			
NSN	Viscosity	UI	FY98 Price	NSN	Viscosity	UI	FY98 Price
9150-01-351-9019	15W40	BX	\$13.32	9150-01-422-8899	15W40	BX	call
9150-01-352-2962	15W40	CO	\$21.49	9150-01-422-8750	15W40	CO	call
9150-01-351-9018	15W40	DR	\$200.16	9150-01-422-8746	15W40	DR	call
9150-01-351-9016	30	BX	\$12.64	9150-01-422-9250	30	BX	call
9150-01-352-8090	30	CO	\$20.56	9150-01-422-9247	30	CO	call
9150-01-351-9015	30	DR	\$189.86	9150-01-422-8997	30	DR	call
9150-01-352-8091	40	DR	\$207.03	9150-01-422-8901	40	DR	call
VIRGIN Mil-Spec Tactical Oils (iaw MIL-L-2104)				RE-REFINED Mil-Spec Tactical Oils (iaw MIL-L-2104)			
NSN	Viscosity	UI	FY98 Price	NSN	Viscosity	UI	FY98 Price
9150-01-178-4725	15W40	QT	\$1.10	9150-01-421-1427	15W40	QT	\$1.10
9150-01-152-4118	15W40	CN	\$18.00	9150-01-421-1424	15W40	CN	\$18.00
9150-01-152-4119	15W40	DR	\$173.50	9150-01-421-1432	15W40	DR	\$173.50

INTERNATIONAL CONFERENCE ON THE ENVIRONMENTAL HEALTH AND SAFETY OF JET FUEL

The first International Conference on the Environmental Health and Safety of Jet Fuel will be held 1-3 Apr. 1998, at the Holiday Inn Riverwalk, San Antonio, TX. The conference will bring together interested parties from industry, academia, and government. The purpose of the conference is to improve communication between the research and operational communities, to allow networking among those currently addressing jet fuel concerns, and provide a framework for identifying current and future health and operational research needs. The conference is cosponsored by the United States Air Force (USAF), the National Institute of Occupational Safety and Health (NIOSH), the Environmental Protection Agency National Exposure Research Laboratory (NERL), and the American Industrial Hygiene Association (AIHA).

Mr. Gary Vest, Principle Deputy Under Secretary of Defense (Environmental Security) (DUSD(ES)), will deliver the keynote address. USAF medical community comments will be provided by Dr. Sanford Zelnick, HQ Air Force Medical Operations Agency (HQ AFMOA). Maj Blane Wampler, ASC/LPA, Wright-Patterson AFB, OH, will present topics from the DoD Propulsion Environmental Working Group (PEWG). Other presentations address issues such as occupational aspects of jet fuel, applied research efforts, basic research efforts, and environmental aspects. Several topics feature studies concerning evaluating the health impact to workers exposed to jet fuel.

The conversion from JP-4 to JP-8 jet fuel resulted in the need for the USAF to have accurate and complete emissions data related to JP-8 fuel use to meet regulatory requirements. In addition, concerns about the health impacts to workers exposed were aroused by the following: (1) complaints from bases on ground crew exposure during cold engine starts; (2) dermal impact noted by medical officers as well as respiratory tract concerns; and (3) oil residual surfaces from exhaust emissions indicating a high level of unburned fuel.

The USAF took the initiative to establish an unified research approach to environment, safety and occupational health (ESOH) issues related to JP-8 jet fuel use. Additionally, the DUSD (ES) signed an agreement with Norway for a joint study on the toxic effects of jet fuels.

This conference is a cumulation of these efforts. Information about the conference can be found on the Det. 1, HSC Occupational & Environmental Health Home Page at <http://www.brooks.af.mil/AL/OE/oehome.htm>. For additional information concerning the conference, contact Det 1, HSC/OEMI, Industrial Hygiene Consultants at (210) 536-6143, 6146, or 6119 or DSN 240-6143, 6146, or 6119. ■

UPCOMING EVENTS

Date	Meeting	Location	POC	Phone/E-mail
04 Feb 1998	Weapon System P2 Center Working Group VTC	1100-1200 Eastern Time	Mr. Peter Logan	DSN 478-4536
12 Feb 1998	ASC Acquisition Environmental & Health Protection Committee Meeting	Room 217, Bldg 14, Area B, Wright-Patterson AFB, OH	LtCol Gil Montoya	DSN 785-3059, ext. 308
22-27 Feb 1998	Air Combat Command (ACC) Environmental Training Symposium	Adams Mark Hotel Conference Center, Denver, CO	HQ ACC/CE	(757) 764-9775 FAX (757) 764-9369 or e-mail: symposium@HQaccCE.langlely.af.mil
03-05 Mar 1998	Weapon System P2 Center Working Group Conference - 9th Joint Solutions to Common Problems	Holiday Inn Select, San Antonio, TX	Mr. Richard Freeman	DSN 487-6850
01 Apr 1998	Weapon System P2 Center Working Group VTC	1100-1200 Eastern Time	Mr. Peter Logan	DSN 478-4536
01-03 Apr 1998	International Conference on the Environmental Health and Safety of Jet Fuel	Holiday Inn Riverwalk, Conference Center, 7th Floor, San Antonio, TX	Maj Les Smith	DSN 240-6143, 6146, 6119 comm. (210) 536-6143
06-09 Apr 1998	1998 Air Force Corrosion Program Management Conference	Crown Plaza, Macon, GA	Ms. Beverly Dillard	DSN 468-3284
06-09 Apr 1998	24th Environmental Symposium and Exhibition	Tampa Convention Center, Tampa, FL	ADPA/NSIA	(703) 522-1820
27-30 Apr 1998	Conference on Issues and Applications in Toxicology and Risk Assessment	Hope Hotel and Conference Center, Wright-Patterson AFB, OH	Ms. Lois Doncaster	(937) 255-5150, ext. 3140
28-30 Apr 1998	National P2 Roundtable	Hyatt Regency, Cincinnati, OH	USEPA	(513) 569-7578
06 May 1998	Weapon System P2 Center Working Group VTC	1100-1200 Eastern Time	Mr. Peter Logan	DSN 478-4536
09-15 May 1998	American Industrial Hygiene Conference & Exposition	World Congress Center, Atlanta, GA	AIHA	(703) 849-8888
11-15 May 1998	Global Demilitarization	Coeur d'Alene, ID	ADPA	(703) 522-1820 FAX (703) 522-1885
12-14 May 1998	Halon Options Technical Working Conference	Sheraton Old Town, Albuquerque, NM	Ms. Leanne Oliver	(505) 272-7250, FAX (505) 272-7203 or e-mail: oliver@nmeri-unm.edu
01-03 Jun 1998	3rd Conference on Aerospace Environmental Technology	Von Braun Center, Huntsville, AL	Mr. Bob Cothran	(205) 890-6372 or 1-800-448-4035
03 Jun 1998	Weapon System P2 Center Working Group VTC	1100-1200 Eastern Time	Mr. Peter Logan	DSN 478-4536